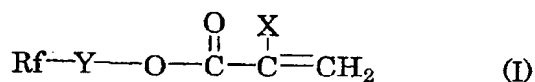


CLAIMS

1. A surface treatment agent comprising a fluoropolymer which has repeating units derived from a fluorine-containing monomer of the formula:



- wherein X is a fluorine atom, a chlorine atom, a bromine atom, an iodine atom, a CFX^1X^2 group (in which X^1 and X^2 are each a hydrogen atom, a fluorine atom, a chlorine atom, a bromine atom or an iodine atom), a cyano group, a linear or branched fluoroalkyl group having 1 to 21 carbon atoms, a substituted or unsubstituted benzyl group, or a substituted or unsubstituted phenyl group;
- Y is an aliphatic group having 1 to 10 carbon atoms, an aromatic or cycloaliphatic group having 6 to 10 carbon atoms, a $-\text{CH}_2\text{CH}_2\text{N}(\text{R}^1)\text{SO}_2-$ group (in which R^1 is an alkyl group having 1 to 4 carbon atoms) or a $-\text{CH}_2\text{CH}(\text{OY}^1)\text{CH}_2-$ group (in which Y^1 is a hydrogen atom or an acetyl group); and
- Rf is a linear or branched fluoroalkyl or fluoroalkenyl group having 1 to 21 carbon atoms, or a fluoroether group having totally 1 to 200 repeating units selected from the group consisting of the repeating units: $-\text{C}_3\text{F}_6\text{O}-$, $-\text{C}_2\text{F}_4\text{O}-$

and $-\text{CF}_2\text{O}-$, and

wherein (a) the fluoropolymer contains a silicon atom,

and/or (b) the surface treatment agent comprises the

fluoropolymer (a first polymer) and a second polymer

5 different from the first polymer, the second polymer being
a silicon-containing polymer which contains a silicon atom.

2. The surface treatment agent according to claim 1,

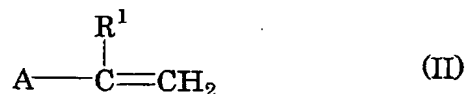
wherein the silicon-containing fluoropolymer comprises a

10 fluorine-containing monomer and a silicon-containing
monomer.

3. The surface treatment agent according to claim 2,

wherein the silicon-containing monomer is represented by

15 the formula:



wherein A is a monovalent group having at least one silicon
atom, and R^1 is a hydrogen atom or a methyl group.

4. The surface treatment agent according to claim 3,

20 wherein the A group in the formula (II) is represented by
the formula:

$\text{R}_{\text{Si}}-\text{X}-$

wherein R_{Si} is

$R^{11}-(Si(R^{12})_2)_n-$, or

$R^{11}-(Si(R^{12})_2-O)_p-$

(in which the R^{11} group is a hydrogen atom, or a C_1-C_8 alkyl group or a C_6-C_8 aryl group; the R^{12} groups may be the same or different, each of which is a hydrogen atom, a C_1-C_8 hydrocarbon or halogenated hydrocarbon group optionally having a functional group; and p is a number of 1 to 100); and

X is a direct bond, $-(CH_2)_q-$ (in which q is a number of 1 to 20), $-(CH_2)_r-O-$ (in which r is a number of 0 to 20), or $-(CH_2)_s-OC(=O)-$ (in which s is a number of 0 to 20).

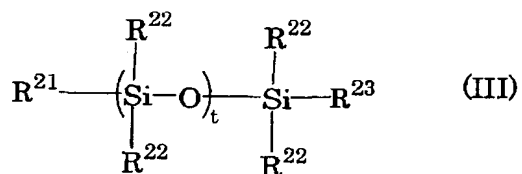
5. The surface treatment agent according to claim 2, wherein the silicon-containing fluoropolymer contains a fluorine-free and silicon-free monomer in addition to the fluorine-containing monomer and the silicon-containing monomer.

6. The surface treatment agent according to claim 5, wherein, in the silicon-containing fluoropolymer, the amount of the silicon-containing monomer is from 0.01 to 50 parts by weight, and the amount of the fluorine-free and silicon-free monomer is 50 or less parts by weight, based on 100 parts by weight of the fluorine-containing monomer.

7. The surface treatment agent according to claim 1, wherein the silicon-containing polymer as the second polymer different from the fluoropolymer is a siloxane polymer.

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8. The surface treatment agent according to claim 7, wherein the siloxane polymer is a compound of the formula:



wherein the R^{21} and R^{23} groups are each a hydrogen atom, a $\text{C}_1\text{-C}_8$ hydrocarbon group (e.g., a $\text{C}_1\text{-C}_8$ alkyl group or a $\text{C}_6\text{-C}_8$ aryl group) or a functional group-containing group; the R^{22} groups may be the same or different, each of which is a hydrogen atom, a $\text{C}_1\text{-C}_8$ hydrocarbon group, a $\text{C}_1\text{-C}_8$ halogenated hydrocarbon group, or a functional group-containing group; and t is a number of 1 to 200.

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9. The surface treatment agent according to claim 1, wherein the amount of the silicon-containing polymer as the second polymer is 0.01 to 50 parts by weight, per 100 parts by weight of the fluoropolymer.

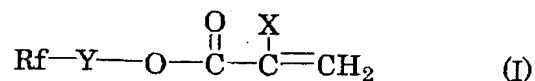
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10. The surface treatment agent according to claim 1,

wherein the Rf group is a fluoroalkyl or fluoroalkenyl group having 1 to 6 carbon atoms.

11. The surface treatment agent according to claim 1,
5 which is in the form of a solution, an emulsion or an aerosol.

12. A silicon-containing fluoropolymer comprising:
(A) repeating units derived from a fluorine-containing
10 monomer of the formula:



wherein X is a fluorine atom, a chlorine atom, a bromine atom, an iodine atom, a CFX¹X² group (in which X¹ and X² are each a hydrogen atom, a fluorine atom, a chlorine atom, a bromine atom or an iodine atom), a cyano group, a linear or
15 branched fluoroalkyl group having 1 to 21 carbon atoms, a substituted or unsubstituted benzyl group, or a substituted or unsubstituted phenyl group;

Y is an alkylene group having 1 to 3 carbon atoms or
a -CH₂CH(OY¹)CH₂- group (in which Y¹ is a hydrogen atom or
20 an acetyl group); and

Rf is a linear or branched fluoroalkyl or fluoroalkenyl group having 1 to 21 carbon atoms, or a fluoroether group having 1 to 200 repeating unit selected from the group

consisting of the repeating units: $-C_3F_6O-$, $-C_2F_4O-$ and $-CF_2O-$; and

(B) repeating units derived from a silicon-containing monomer.

5

13. The polymer according to claim 12, wherein the silicon-containing fluoropolymer contains a fluorine-free and silicon-free monomer in addition to the fluorine-containing monomer and the silicon-containing monomer.

10

14. A method for treating a substrate with the surface treatment agent according to any one of claims 1 to 11.

15. A textile treated with the surface treatment agent according to any one of claims 1 to 11.

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16. A carpet treated with the surface treatment agent according to any one of claims 1 to 11.